EQUATIONS REVISION

Example

\[ 3x + 5 = 17 \]
\[ 3x + 5 - 5 = 17 - 5 \]
\[ 3x = 12 \]
\[ \frac{3x}{3} = \frac{12}{3} \]
\[ x = 4 \]

Steps

Subtract 5 from each side

Divide each side by 3

Exercise

1. \[ 2x + 6 = 16 \]
2. \[ 6x + 2 = 50 \]
3. \[ 3x - 2 = 31 \]
4. \[ 9x - 4 = 41 \]
5. \[ 3y + 9 = 15 \]
6. \[ 8w - 1 = 23 \]
7. \[ 5g + 9 = 29 \]
8. \[ 2x + 11 = 25 \]
9. \[ 12t - 10 = 50 \]
10. \[ 2y + 9 = 23 \]
11. \[ 3 + 5m = 28 \]
12. \[ 10 + 3f = 16 \]
13. \[ 12 + 4k = 36 \]
14. \[ 6 + 11c = 28 \]
15. \[ 25 = 3b + 7 \]
16. \[ 40 = 9d + 4 \]
17. \[ 37 = 11g - 7 \]
18. \[ 90 = 8x + 2 \]
19. \[ 64 = 15n + 4 \]
20. \[ 35 = 6k - 13 \]
21. \[ 3h + 5 = -1 \]
22. \[ 5m - 2 = -17 \]
23. \[ 7y + 10 = 3 \]
24. \[ 4d - 9 = -21 \]
25. \[ 9 + 3y = -6 \]
26. \[ 2j - 5 = 2 \]
27. \[ 4s + 1 = 2 \]
28. \[ 3m - 2 = 5 \]
29. \[ 8x + 3 = 4 \]
30. \[ 2 + 5r = 9 \]
31. A rectangle is \( x + 4 \) cm long and \( x \) cm wide. It has a perimeter of 28cm.

Form an equation and solve it to find the value of \( x \).

32. Jack had 88 pence. He bought 3 biscuits and had 25 pence left over.

Form an equation and solve it to find the cost of 1 biscuit.

33. Anna is \( x \) years old. Jason is 5 years older than Anna and Andrew is twice as old as her.

Altogether their ages add up to 41 years.

Form an equation and solve it to find the ages of Anna, Jason and Andrew.
### ANSWERS

1. \(2x + 6 = 16\)  
   \[2x + 6 = 16\]  
   \[\frac{2x}{2} + \frac{6}{2} = \frac{16}{2}\]  
   \[x + 3 = 8\]  
   \[x = 5\]

2. \(6x + 2 = 50\)  
   \[6x + 2 = 50\]  
   \[\frac{6x}{6} + \frac{2}{6} = \frac{50}{6}\]  
   \[x + \frac{1}{3} = \frac{25}{3}\]  
   \[x = 8\]

3. \(3x - 2 = 31\)  
   \[3x - 2 = 31\]  
   \[\frac{3x}{3} - \frac{2}{3} = \frac{31}{3}\]  
   \[x - \frac{2}{3} = \frac{31}{3}\]  
   \[x = \frac{33}{3}\]  
   \[x = 11\]

4. \(9x - 4 = 41\)  
   \[9x - 4 = 41\]  
   \[\frac{9x}{9} - \frac{4}{9} = \frac{41}{9}\]  
   \[x - \frac{4}{9} = \frac{41}{9}\]  
   \[x = \frac{45}{9}\]  
   \[x = 5\]

5. \(3y + 9 = 15\)  
   \[3y + 9 = 15\]  
   \[\frac{3y}{3} + \frac{9}{3} = \frac{15}{3}\]  
   \[y + 3 = 5\]  
   \[y = 2\]

6. \(8w - 1 = 23\)  
   \[8w - 1 = 23\]  
   \[\frac{8w}{8} - \frac{1}{8} = \frac{23}{8}\]  
   \[w - \frac{1}{8} = \frac{23}{8}\]  
   \[w = \frac{24}{8}\]  
   \[w = 3\]

7. \(5g + 9 = 29\)  
   \[5g + 9 = 29\]  
   \[\frac{5g}{5} + \frac{9}{5} = \frac{29}{5}\]  
   \[g + \frac{9}{5} = \frac{29}{5}\]  
   \[g = \frac{20}{5}\]  
   \[g = 4\]

8. \(2x + 11 = 25\)  
   \[2x + 11 = 25\]  
   \[\frac{2x}{2} + \frac{11}{2} = \frac{25}{2}\]  
   \[x + \frac{11}{2} = \frac{25}{2}\]  
   \[x = \frac{14}{2}\]  
   \[x = 7\]

9. \(12t - 10 = 50\)  
   \[12t - 10 = 50\]  
   \[\frac{12t}{12} - \frac{10}{12} = \frac{50}{12}\]  
   \[t - \frac{10}{12} = \frac{50}{12}\]  
   \[t = \frac{60}{12}\]  
   \[t = 5\]

10. \(2y + 9 = 23\)  
    \[2y + 9 = 23\]  
    \[\frac{2y}{2} + \frac{9}{2} = \frac{23}{2}\]  
    \[y + \frac{9}{2} = \frac{23}{2}\]  
    \[y = \frac{14}{2}\]  
    \[y = 7\]

11. \(3 + 5m = 28\)  
    \[3 + 5m = 28\]  
    \[\frac{3}{3} + \frac{5m}{3} = \frac{28}{3}\]  
    \[1 + \frac{5m}{3} = \frac{28}{3}\]  
    \[\frac{5m}{3} = \frac{25}{3}\]  
    \[5m = 25\]  
    \[m = 5\]

12. \(10 + 3f = 16\)  
    \[10 + 3f = 16\]  
    \[\frac{10}{3} + \frac{3f}{3} = \frac{16}{3}\]  
    \[3f = 6\]  
    \[f = 2\]

13. \(12 + 4k = 36\)  
    \[12 + 4k = 36\]  
    \[\frac{12}{4} + \frac{4k}{4} = \frac{36}{4}\]  
    \[3 + k = 9\]  
    \[k = 6\]

14. \(6 + 11c = 28\)  
    \[6 + 11c = 28\]  
    \[\frac{6}{11} + \frac{11c}{11} = \frac{28}{11}\]  
    \[c + 2 = 2\]  
    \[c = 0\]

15. \(25 = 3b + 7\)  
    \[25 = 3b + 7\]  
    \[\frac{25}{3} = \frac{3b}{3} + \frac{7}{3}\]  
    \[8 = b\]

16. \(40 = 9d + 4\)  
    \[40 = 9d + 4\]  
    \[\frac{40}{9} = \frac{9d}{9} + \frac{4}{9}\]  
    \[4\frac{4}{9} = d\]  
    \[d = 4\]

17. \(37 = 11g - 7\)  
    \[37 = 11g - 7\]  
    \[\frac{37}{11} = \frac{11g}{11} - \frac{7}{11}\]  
    \[3 = g\]

18. \(90 = 8x + 2\)  
    \[90 = 8x + 2\]  
    \[\frac{90}{8} = \frac{8x}{8} + \frac{2}{8}\]  
    \[8 = x\]  
    \[x = 11\]
19. \[ 64 = 15n + 4 \]
   \[ n = 4 \]

20. \[ 35 = 6k - 13 \]
   \[ 3k = 8 \]
   \[ k = \frac{8}{3} \]

21. \[ 3h + 5 = -1 \]
   \[ 3h = -6 \]
   \[ h = -2 \]

22. \[ 5m - 2 = -17 \]
   \[ 5m = -15 \]
   \[ m = -3 \]

23. \[ 7y + 10 = 3 \]
   \[ 7y = -7 \]
   \[ y = -1 \]

24. \[ 4d - 9 = -21 \]
   \[ 4d = -12 \]
   \[ d = -3 \]

25. \[ 9 + 3y = -6 \]
   \[ 3y = -15 \]
   \[ y = -5 \]

26. \[ 2j - 5 = 2 \]
   \[ 2j = 7 \]
   \[ j = 3.5 \]

27. \[ 4s + 1 = 2 \]
   \[ 4s = 1 \]
   \[ s = \frac{1}{4} \]

28. \[ 3m - 2 = 5 \]
   \[ 3m = 7 \]
   \[ m = 2\frac{1}{3} \]

29. \[ 8x + 3 = 4 \]
   \[ 8x = 1 \]
   \[ x = \frac{1}{8} \]

30. \[ 2 + 5r = 9 \]
   \[ 5r = 7 \]
   \[ r = 1\frac{2}{5} \]

31. \[ x + 4 + x + x + 4 + x = 28 \]
   \[ 4x + 8 = 28 \]
   \[ x = 5 \]

32. \[ 3b + 25 = 88 \]
   \[ 3b = 63 \]
   \[ b = 21 \]

33. \[ x + x + 5 + 2x = 41 \]
   \[ 4x + 5.5 = 41.5 \]
   \[ 4x = 36 \]
   \[ x = 9 \]

Anna is 9 years old
Jason is 14 years old
Andrew is 18 years old

a biscuit costs 21p